

LTRA Research Strategy, Experimental Design and Methods: conceptual model, scientific design, and research methods

In response to External Assessment Panel (EAP) requests to effectively communicate the science conducted by SANREM CRSP PIs, each project must present a conceptual model that nests research objectives, hypotheses, and activities. The LTRAs have a solid operational framework as presented in annual work plans. However, three additional expository elements which demonstrate each LTRA's scientific basis need to be explicitly delineated:

- the conceptual model that incorporates the key driving forces and links the LTRA's cross-disciplinary research domains/components;
- the hypotheses tested and/or research questions answered within domains/components; and
- the research methods used to provide answers to research questions or test hypotheses.

Please work with your LTRA colleagues to prepare the following items that will serve as your LTRA's component of SANREM CRSP CAPS Research Methodologies document and will also appear on the SANREM CRSP website. This should be a comprehensive and tightly written document (no more than 5-8 pages).

1. An introduction presenting your research goals, objectives, and the strategy integrating socioeconomic and biophysical sciences to address the scientific problems constituting the core of your LTRA.
2. Specify the critical research hypotheses tested or questions answered in each of the LTRA's research domains/components. Where cross-site comparisons are possible, please consolidate hypotheses and methodologies.
3. Link the leading hypotheses/questions to the methods. Describe the methods and document them with appropriate references. Explain how findings will be recognized, when they will be achieved, and how they will be used to inform further research or development action.
4. Elaborate your research strategy describing the various scientific approaches, demonstrating how findings in one research domain will inform or shape research conducted in other components.
5. Illustrate this transdisciplinary research strategy with a diagram highlighting the interrelationships between the key driving forces shaping the scientific problems, and the various scientific models and research activities designed to address them.